

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
26 May 2005 (26.05.2005)

PCT

(10) International Publication Number
WO 2005/046439 A3

(51) International Patent Classification⁷: **A61M 37/00**,
1/00

(21) International Application Number:
PCT/US2004/036933

(22) International Filing Date:
5 November 2004 (05.11.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/518,122 7 November 2003 (07.11.2003) US

(71) Applicant (for all designated States except US):
NXSTAGE MEDICAL, INC. [US/US]; 439 South
Union Street, Fifth Floor, Lawrence, MA 01843 (US).

(72) Inventors: BRUGGER, James; 4 Savory Street, New-
buryport, MA 01950 (US). McDOWELL, Christopher,
S.; 3 Carriage Lane, Maryland, MA 01754 (US).

(74) Agents: CATAN, Mark, A. et al.; Proskauer Rose LLP,
1585 Broadway, New York, NY 10036 (US).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,
ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE,
SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, ML, MR, NE, SN, TD, TG).

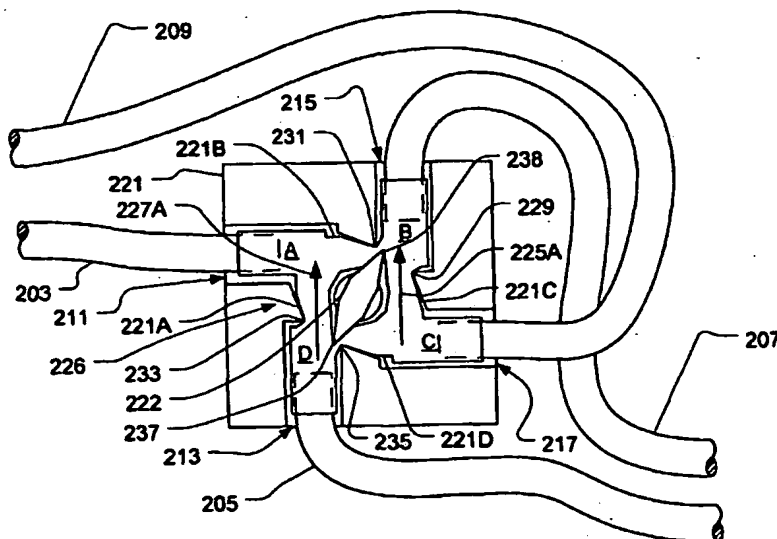
Published:

- with international search report
- before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments

(88) Date of publication of the international search report:
12 January 2006

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: IMPROVED METHODS AND APPARATUS FOR LEAK DETECTION IN BLOOD PROCESSING SYSTEMS



(57) Abstract: A blood processing system includes a flow reversing device with at least an air sensor in the venous line located near the patient. During treatment, blood flow is reversed to cause air to infiltrate the blood lines if any disconnections or breaks in the blood line are present. One means for placing the sensor close to the patient is to provide the flow switching device and sensors in a small lightweight module that can be located close the treatment machine. Another is to provide a module with just the sensors near the access.

WO 2005/046439 A3